



Constant
Climate Chamber
with Peltier technology
HPP 108



Operating Instructions



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2 General notes and safety notes

You have purchased a technically fully proven product which has been produced in Germany with the use of high-grade materials and the application of the latest manufacturing techniques; it has been factory tested for many hours.

In addition we guarantee the supply of spare parts over 10 years.



This mark in the Operating Instructions means:

Watch out Important Note!



Observation of the Operating Instructions is necessary for faultless operation and for any possible claims under warranty. If these Instructions are disregarded, all claims under warranty, guarantee and indemnification are excluded!

The right to technical modifications is reserved. Dimensional details are not binding.

2.1 Transport

Always use gloves!

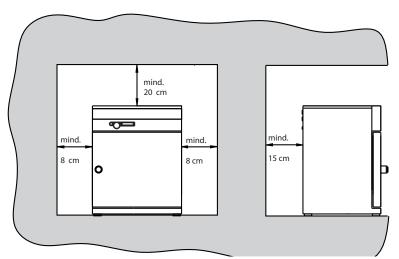
If the oven has to be carried, at least 2 persons are required to transport it.



Do not place the oven on a readily inflammable support surface!

It is important that the oven is set up accurately horizontally!

3 Installation facilities (accessories)



The oven can be placed on the floor or on a bench (working surface). It is important that the oven is set up accurately horizontally; the door may have to be adjusted (see Section: "Maintenance")

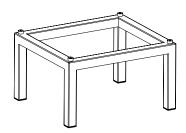
The spacing from the back of the oven to the wall should be at least 15 cm. The spacing to the ceiling must not be less than 20 cm and that at the side to the wall not less than 8 cm. Generally it is essential to have adequate air ventilation around the oven.

Model HPP 108 is mounted on castors. The front castors pivot and can be locked. In order to ensure the stability of the oven the front castors must always be set facing towards the front.

Information on accessories will be found in our leaflet or on our internet page www.memmert.com. Please note the installation instructions for our accessories.

3.1 Subframe

Model HPP 108 can be mounted on a subframe (accessory)

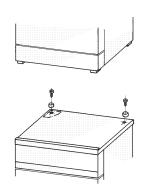


3.2 Stackable version

Two HPP 108 ovens of the same model size can be stacked on each other. Note that the oven with the lower working temperature must always be placed at the bottom.

Foot locators (accessory) have to be fitted on the bottom oven.

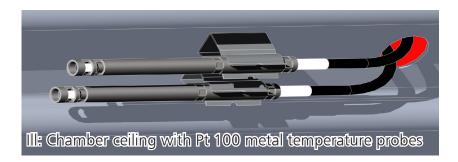
- Take off cover of bottom oven
- Place drill jig (supplied with foot locators) into the inverted cover at the back
- Mark holes and drill 4.2 mm dia.
- Screw the foot locators to the top of the cover using the screws and nuts supplied
- Re-fit the cover



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3.3 Initial start-up

When the oven is started up for the first time, it should be supervised continuously until steady conditions have been reached. Severe vibrations during transport may cause movement of the temperature probes in their holder inside the chamber. Note therefore that before the first start-up the temperature probes should be checked for their correct position and, if necessary, carefully aligned in their mounting (see ill).



3.4 Oven load

Full consideration must be given to the physical and chemical properties of your load (e.g. combustion temperature etc.) in order to prevent serious damage to load, oven and surroundings.

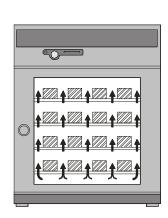
Please note that the MEMMERT ovens described here are <u>not</u> explosion proof (they do not conform to the Industrial Association Specification VBG 24) and are therefore not suitable for drying, evaporating and burning-in of paints, enamels or similar materials whose solvents may produce an inflammable mixture with air. There must be no possibility of the formation of inflammable gas/air mixtures either within the oven chamber or in the immediate surroundings of the equipment.

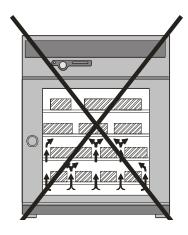
Large amounts of dust or corrosive fumes inside the oven chamber or in the surroundings of the equipment may produce deposits within the oven and lead to short-circuits or damage the electronics. It is therefore important that adequate precautions are taken against excessive dust or corrosive fumes.

In order to ensure proper air circulation inside the chamber, there must be sufficient spacing of the load inside the oven. Do not place any load on the floor, against the side walls or underneath the ceiling of the chamber (heating ribs). In order to ensure optimum air circulation the shelves must be so inserted that the air spacings between door, shelf and rear chamber wall are approximately equal.

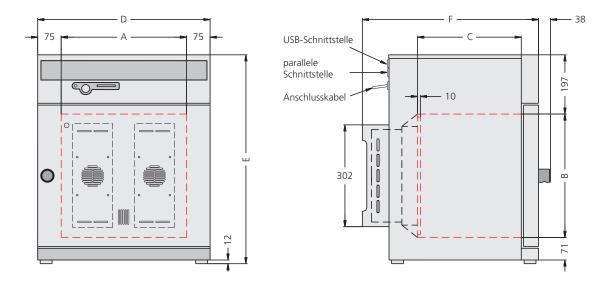
The maximum number and the loading of the shelves can be found in the table in the Section "Technical Data". With unfavourable loading (too closely spaced) it is possible that the set temperature may be reached only after a longer period of time.

See stick-on label "Correct Loading" on the oven!





4 Technical data



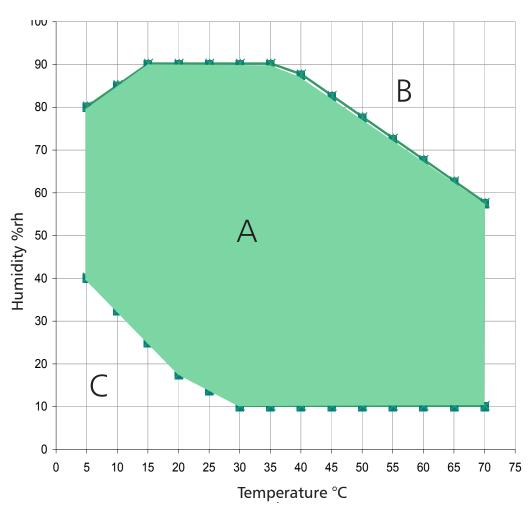
Model	HPP 108
Chamber width A [mm]	560
Chamber height B [mm]	480
Chamber depth C [mm]	400
Oven width D [mm]	710
Oven height E [mm]	760
Oven depth F [mm]	640
Chamber volume [litre]	108
Weight [kg]	66/70
Power [W]	350
Max. number of shelves	5
Max. load per shelf [kg]	30
Max. load per oven [kg]	60

Ambient conditions	 Ambient temperature HPP: 16°C to 28°C rH 70% max., no condensation Overvoltage category: II Contamination level: 2
temperature	 temperature is measued with Pt100 in 4-wire circuit Setpoint range 0°C to 70°C setting accuracy: 0,1°C Working temperature range: from 5°C to 70°C variation (time): ±0,1°C max uniformity (space): ±0,4 K (at 10 - 37 °C)
Monitor	 temperature is measued with Pt100 in 4-wire circuit Setpoint range 0°C to 70°C setting accuracy: 0,1°C
Humidity	The relative humidity in the chamber is measured by a capacitive humidity sensor and indicated digitally in %. • accuracy of humidity sensor: 0,5 % rh • adjustment range: 10 to 90 %rh, off* • setting accuracy: 1rh% • indication range: 1 to 98 % rh • variation (time): ±1,5%rh max *setting off: humidity control deactivated

4.1 Working range of the HPP units

The temperature-humidity diagram of the humidity chamber HCP indicates the range of temperature and humidity within which continuous condensation-free operation is possible.

Temperature-humidity working range Memmert HPP 108



Range A:

Within this range, any combination of temperature and humidity is possible without any appreciable condensation.

Range B:

Above the range indicated, e.g. 80% rH at 60°C, the steam introduced immediately condenses at the coldest point of the unit due to the dew point.



With prolonged operation at the upper limit or outside the working range there is a possibility of water puddles forming inside the chamber and water can escape from the door seal!

Range C:

At low temperatures and low relative humidity, the usable range depends largely on ambient temperature and humidity.

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4.2 Standard equipment of cooled incubators

- HPP incubators with low-noise, long-life and energy-saving Peltier cooling and heating technology (during heating, part of the energy required is drawn from the surroundings = heat pump)
- Electronic fuzzy-supported PID process controller with permanent power matching and time-saving auto-diagnostic system for rapid fault finding (see Section: "Error messages")
- Alphanumerical text display
- Control of oven and documentation of actual values on MEMoryCard XL
- Programme sequence control for up to 40 ramp segments
- Integral weekly programmer with group function (e.g. all workdays)
- Recessing push/turn control for simple operation of oven
- Visual alarm indication
- Built-in sounder as alarm on overlimit, as audible signal at programme end, and to acknowledge input (key click)
- Digital monitor controller for overtemperature, undertemperature, and as automatically setpoint-following monitor (ASF)
- Monitor relay to switch off heating in case of fault
- Two separate PT100 temperature sensors Class A in 4-wire circuit for control and monitoring
- Convenient integral 3-point temperature calibration
- Parallel printer interface (PCL3 compatible)
- USB interface for computer-supported temperature programmes and for reading the internal report memory
- MEMMERT software "Celsius" for remote operation of oven via a PC and for reading the report memory inside the controller
- A pre-formatted blank MEMoryCard XL with 32 kB storage capacity, reprogrammable for up to 40 ramp segments and additionally 135 hours report memory at 1 minute intervals
- Special equipment (to be ordered separately as accessories): external card reader for MEMoryCard XL for connection to the PC USB interface, 25-way printer cable (parallel, screened)
- Language selection (English, French, Spanish, Italian, German)
- Capacitive humidity sensor
- Active humidity control avoids condensation and ensures rapid achievement of set humidity as well as short recovery times
- 7 different ramp exit commands for advanced temperature applications
- Visual alarm indication
- Audible signal on over-/undertemperature and over-/under-humidity
- Internal documentation memory 1024kB as ring memory for all temperature and humidity values, errors and settings with real-time and date. Documentation approx. 3 months at 1 minute storage interval
- Calibration possible without separate PC: 3-point calibration for temperature on the controller and 2-point calibration for humidity at 20% rH and 90% rH

4.3 Material quality

For external housing MEMMERT employs stainless steel (Mat.Ref. 1.4016). The chamber is made from stainless steel (Mat.Ref. 1.4301) which exhibits high stability, optimum hgygienic properties and corrosion resistance against many (not all) chemicals (warning against e.g. chlorine compounds).

The oven load has to be checked carefully for its chemical compatibility with the above materials.

A compatibility table covering all these materials can be requested from MEMMERT.



WARNING! Always pull out the supply plug before opening the oven cover!

4.4 Electrical equipment

- Operating voltage see label 50/60 Hz
- Current rating see label
- Protection Class 1, i.e. operating isolation with ground connection to EN 61 010
- Protection IP20 to DIN EN 60 529
- Interference suppression to EN55011 Class B
- Oven protected by a fuse 250V/15A fast blow
- Controller protected by a 100 mA fuse (200 mA on 115 V)
- When connecting a MEMMERT oven to the electrical supply you have to observe any local regulations which apply (e.g. in Germany DIN VDE 0100 with FI protection circuit)

4.5 Note on EMC (electromagnetic compatibility)

This product is intended to operate on a supply network with a system impedance Zmax at the transfer point (building connection) of 0.292 Ohm max. The user has to ensure that the product is only operated on an electrical supply network which meets these requirements. If necessary, details of the system impedance can be obtained from the local electricity supply authority.

Note:

Any work involving opening up the oven must only be carried out by a suitably qualified electrician!

4.6 External connection

Equipment connected to the external connections must have interfaces which meet the requirements for safe low voltage (e.g. PC, printer).

4.7 Water connection

The water container supplied has to be filled with distilled water and connected to the H_2O connection using the hose supplied.

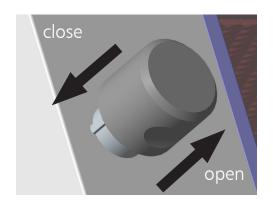
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5 Oven construction and operation

5.1 Operating the door

The door is opened by pulling on the door handle.

The door is closed by the door handle being pushed in.

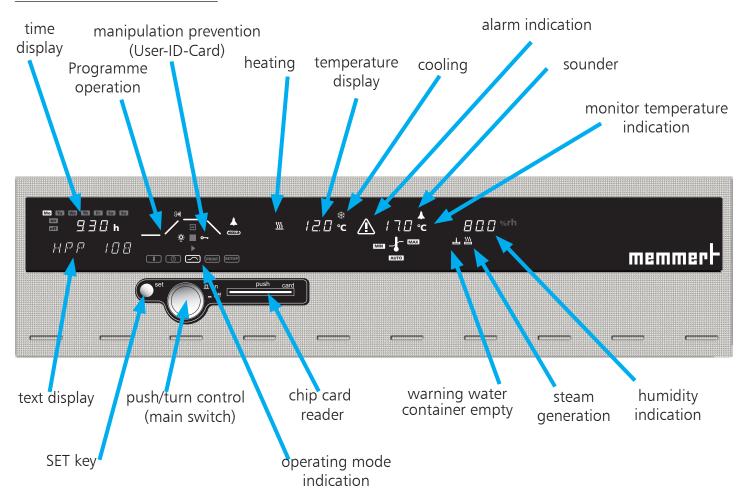


5.2 Setting the temperature

Hold down the SET key and set the temperature setpoint with the push/turn control.

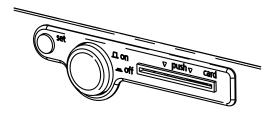
After the SET key has been released the display briefly flashes the temperature setpoint. The display then changes to the actual current temperature and the controller starts to control to the selected temperature setpoint.

5.3 Controls and indications

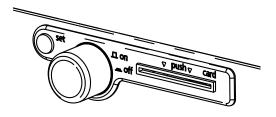


5.4 Switching on

Oven switched on and can be operated using the push/turn control and the SET key.



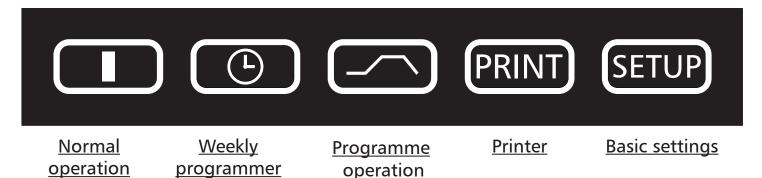
Oven switched off. The push/turn control is pushed in and protected against damage.



The oven is switched on by pressing the push/turn control.

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6 Selecting the operating mode



After holding down the SET key (approx. 3 sec), the current operating mode flashes on the display. A different operating mode can be selected with the push/turn control while the SET key is being held down. After the SET key has been released the controller operates in the new operating mode.

7 Setting the parameters

After an operating mode has been selected, all relevant controller settings are shown simultaneously on the display.

A parameter (menu item) can be selected by rotating the push/turn control; all other parameters are then dimmed.

The selected parameter flashes brightly and can now be altered with the push/turn control while holding down the SET key.

After the SET key has been released the newly set value is stored.

If the push/turn control or the SET key have not been operated for a period of 30 seconds, the controller automatically returns to the main menu.

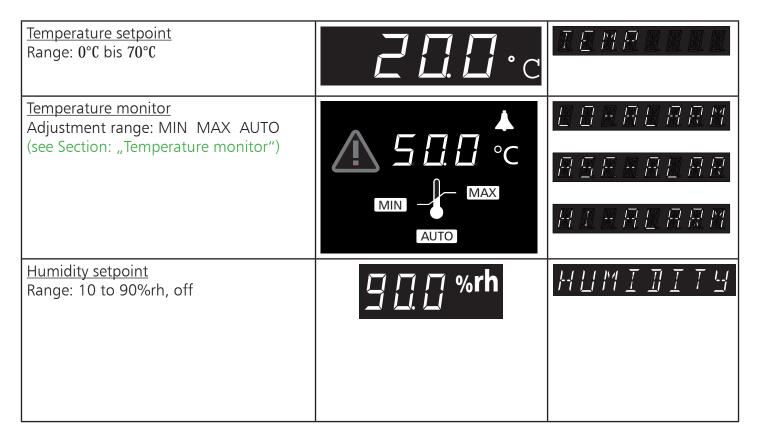
8 Normal operation 💶



In this operating mode the oven operates continuously. The settings for operating the oven can be selected. The settings act directly on the operation of the oven.



By rotating the push/turn control the following parameters can be selected and can be altered as described in the Section "Setting the parameters":

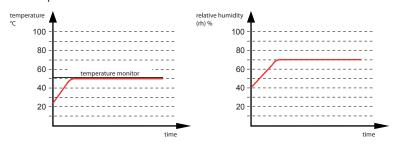


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8.1 Setting example "Normal operation"

The climatic chamber has to heat up to 50°C at 70% fan speed.

The monitor function has to operate at 51°C.



1. Select operating mode "Normal operation"

After holding down the SET key (approx. 3 sec), the current operating mode is flashing. Select operating mode I with the push/turn control while holding down the SET key.



After the SET key has been released the controller is in operating mode I.

2. Select temperature setpoint

Hold down the SET key and use the push/turn control to select the required temperature setpoint of 50°C .

After the SET key has been released the oven briefly flashes the temperature setpoint. The display then changes to the actual temperature and the controller starts to control to the selected temperature setpoint 50°C .



Heating is indicated by the orange heater symbol $\underline{\mathfrak{M}}$

Cooling is indicated by the green cooling symbol $\mbox{\colored}$

3. Select monitor temperature:

Turn the push/turn control clockwise until the overtemperature protection and the symbol **MAX** or **MIN** flashes. Keep the SET key depressed and use the push/turn control to set the overtemperature protection to $51.0~^{\circ}$ C and the undertemperature protection to $49.0~^{\circ}$ C. or



Turn the push/turn control clockwise until the monitor temperature and the symbol **AUTO** flashes. Keep the SET key depressed and set the push/turn control to on .

The tolerance band is selected in the SETUP menu (see section 11).

4. Select humidity setpoint:

Turn the push/turn control clockwise until the humidity display flashes. Keep the SET key depressed and use the push/turn control to set the required humidity setpoint of 70.0 %. After the SET key has been released the humidity setpoint continues to flash briefly. The display then changes to the actual humidity and the controller starts to control to the set value. Humidification is indicated by the symbol $\underline{\omega}$.



9 Weekly programmer O

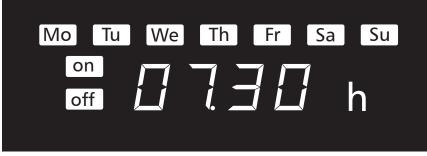


In this operating mode the weekly programmer is activated and the oven switches on and off automatically at the programmed times.

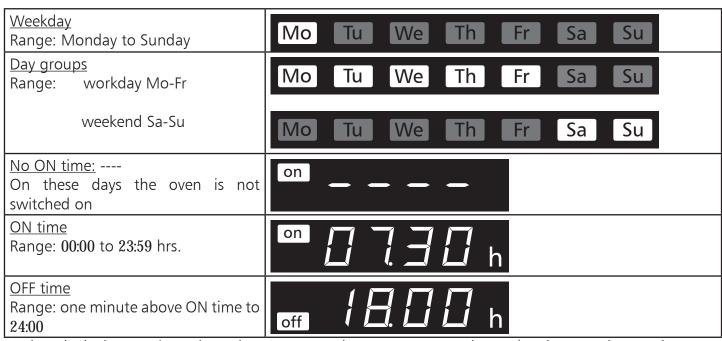
While the weekly programmer is in the OFF phase the oven is in standby mode. Heating and fan are switched off, the controller display is dimmed and shows the clock time.

The sequence of the weekly programmer is repeated every week.

A maximum of 9 time blocks, each consisting of ON time and OFF time, can be programmed.



By rotating the push/turn control the following parameters can be selected and can be altered as described in the Section "Setting the parameters":



Further clockwise rotation selects the parameters (temperature setpoint etc.) as in operating mode I. If no further settings (temperature setpoint etc.) are made for the ON phase, the controller accepts the values from operating mode I.

For safety reasons, always check that an ON time has been programmed only during the required time blocks and days.

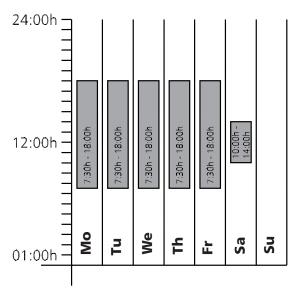
<u>Direct setting of the temperature setpoint:</u>

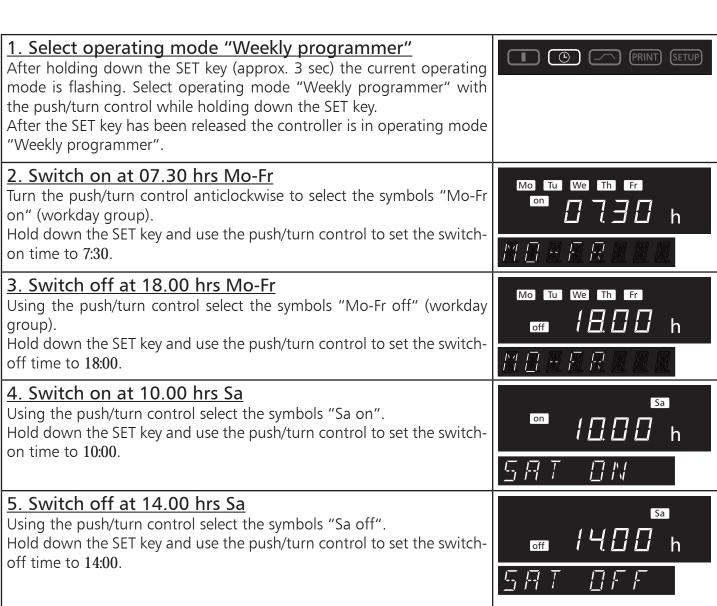
When the controller is in stand-by mode or if the weekly programmer is in the ON phase, the temperature setpoint can be selected directly by briefly pressing the SET key. Clockwise rotation then selects fan speed, air flap and temperature monitor. Anticlockwise rotation again selects setting the individual time blocks.

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9.1 Programming example "Weekly programmer"

The oven (IPP500) has to switch on at 07.30 hrs from Mo to Fr (workday group) and switch off at 18.00 hrs. In addition it has to operate on Saturday from 10.00 to 14.00 hrs.





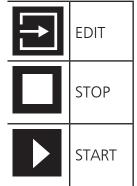
10 Programme operation



In this operating mode, up to 40 freely programmable temperature-time ramps can be set. Rotating the press/turn control while holding down the SET key selects the following parameters in sequence after released the SET key:

- a new programme can be programmed or an existing programme can be edited
- an existing programme can be edited
- starts the programme

- stops the programme



After EDIT has been activated, the following parameters can be selected and can be altered as described in the Section "Selecting the parameters":



Delayed programme start: switch-on day

Range: Monday to Sunday, workdays Mo-Fr, weekend Sa-Sun, all days Mo-Su or no day. If no day of the week is selected, the oven starts up immediately after the programme is started (INSTANT START).

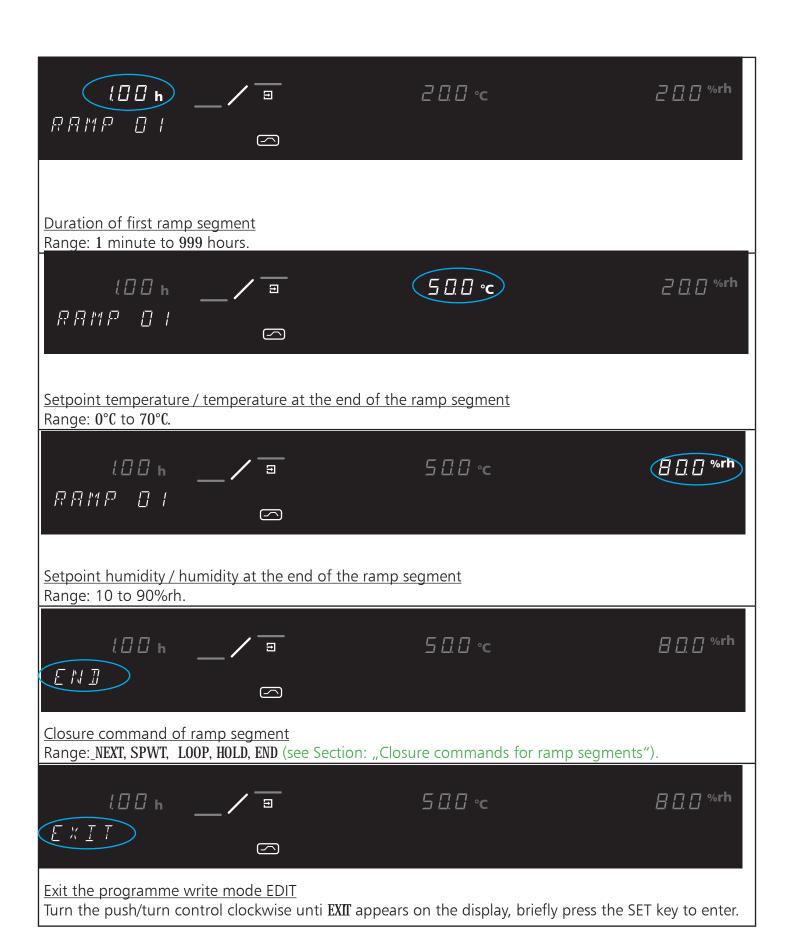


Delayed programme start: switch-on time

Range: 00:00 to 23:59

If no switch-on day has been selected it is not possible to select a switch-on time, and the programme starts immediately (INSTANT START).

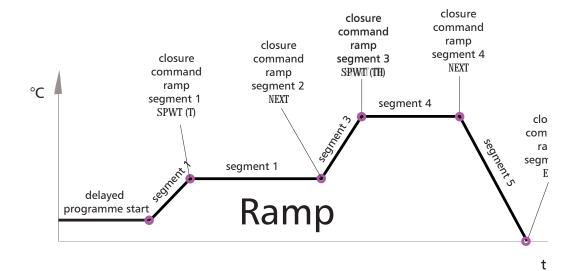
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10.1 Closure commands for ramp segments

NEXT	Follow-on with next programme segment.
SPWT (T) SET-POINT WAIT	Wait until the setpoint temperature is reached. The oven only starts the next programme segment when the programmed setpoint temperature has been reached, even if the programmed heating time has already elapsed.
SPWT (H) SET-POINT WAIT (humidity)	Wait until set humidity is reached. The unit starts with the next programme segment only when the programmed humidity setpoint has been reached, even if the programmed heating time has already elapsed.
SPWT (TH) SET-POINT WAIT (temperature and humidity)	Wait until set temperature and set humidity are reached. The unit starts with the next programme segment only when the programmed temperature setpoint and the programmed humidity setpoint have been reached, even if the programmed heating time has already elapsed.
LOOP	Ramp repeat function The set programme is repeated after passing through all programmed segments. 1-99 = repeats CONT = continuous repeat function
HOLD	End of programme without switching off the heating; temperature and all other settings (e.g. air valve) are maintained.
END	End of programme, heating is switched off, all other settings (e.g. air valve) are reset to base status.

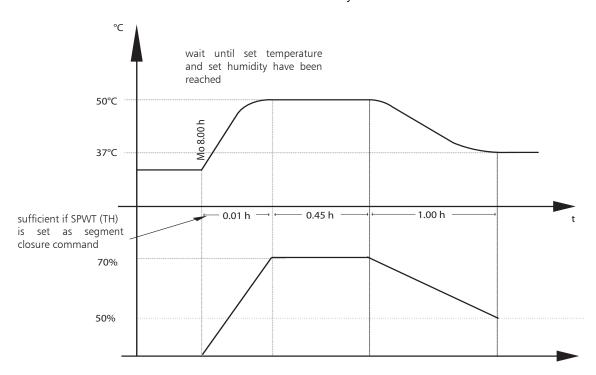
The programme segments are linked together by the segment closure command. These commands therefore control the programme sequence.



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10.2 Programming example programme operation

The climatic chamber has to heat up as quickly as possible to 50°C on Monday at 08.00 hrs with a vel. humidity of 70%rh. The climatic chamber has to hold this temperature for 45 minutes, followed by cooling down in one hour to 37°C with a vel humidity of 50%rh.



1. Select operating mode "programme" PRINT SETUP After holding down the SET key (approx. 3 sec) the current operating mode is flashing. Hold down the SET key and select operating mode "programme" using the push/turn control. After the SET key has been released the controller is in operating mode "programme operation". 2. Edit programme Hold down the SET key and turn the push/turn control to select After the SET key has been released, the controller is in the programme writing mode. 3. Weekday for delayed programme start Мо Hold down the SET key and turn the push/turn control to set the start day Mo. 4. Select clock time for delayed programme start Using the push/turn control, select the time display. Hold down the SET key and set the time 08:00 using the push/turn control.

5. Select duration of first ramp segment Turn the push/turn control further clockwise until the time of the first ramp segment is flashing. Hold down the SET key and set the time 00:01 using the push/turn control.	n u n
6. Select temperature of first ramp segment Turn the push/turn control clockwise until the temperature display is flashing. Hold down the SET key and set the required temperature setpoint of 50°C using the push/turn control.	
7. Select relative humidity of first ramp segment Turn the push/turn control clockwise until the humidity display is flashing. Hold down the SET key and set the required humidity setpoint of 70.0 %rh using the push/turn control. 8. Set closure command of first ramp segment	RAMP DI
Turn the push/turn control clockwise until a segment closure command (e.g. END) appears. Hold down the SET key and set SPWT [TH] with the push/turn control.	5PWT (TH)
9. Select duration of second ramp segment Using the push/turn control select the time indication. Hold down the SET key and set the time 00:45 using the push/turn control.	1145 h
10. Select temperature of second ramp segment Turn the push/turn control clockwise until the temperature display is flashing. Hold down the SET key and set the required temperature setpoint of 50°C using the push/turn control.	50.0 °c
11. Select relative humidity of second ramp segment Turn the push/turn control clockwise until the humidity display is flashing. Hold down the SET key and set the required humidity setpoint of 70.0 %rh using the push/turn control.	7 [] %rh R R M P
12. Set closure command for second ramp segment Turn the push/turn control clockwise until a segment closure command (e.g END) appears. Hold down the SET key and set NEXT with the push/turn control.	

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13. Select duration of third ramp segment Mit dem Drück/Using the push/turn control select the time indication Hold down the SET key and set the time 01:00 using the push/turn control.	
14. Select temperature of third ramp segment Turn the push/turn control clockwise until the temperature display is flashing. Hold down the SET key and set the required temperature setpoint of 37°C using the push/turn control.	
15. Select relative humidity of third ramp segment Turn the push/turn control clockwise until the humidity display is flashing. Hold down the SET key and set the required humidity setpoint of 50.0 %rh using the push/turn control.	
16. Set closure command for third ramp segment Turn the push/turn control clockwise until a segment closure command (e.g END) appears. Press the SET key briefly to enter.	
17. Exit programme writing mode EDIT Turn the push/turn control clockwise until EXIT appears on the display. Press the SET key briefly to enter.	EXIT
18. Set temperature monitor Turn the push/turn control clockwise and set the temperature monitor. (see Section: "Temperature monitor").	1 5 2. □ °C MIN MAX AUTO
19. Start programme Turn the push/turn control anticlockwise until the stop symbol is flashing. Hold down the SET key and select Start with the push/turn control.	

11 Printer PRINT



All IPP / ICP incubators are fitted as standard with a parallel printer interface, as used on personal computers.

This parallel printer interface on the back of the oven is suitable for connecting conventional PCL3-compatible ink jet printers which are provided with a parallel printer interface (e.g. HP Deskjet 5550 or HP Deskjet 9xx).

It is important to use a screened interface cable. The screen must be connected to the plug case.

The controller is provided with an internal report memory (see Section: "Report memory"). The report data can in this operating mode be printed out through the printer connected to the oven.

When using a colour printer, the various graphics can be printed in colour.

On the printout the GLP data head is also printed automatically and contains the following information:

- Printing date
- Time period of report
- Running page number
- Serial number and oven designation

By turning the push/turn control the following parameters can be selected in turn and altered as described in the Section Setting the parameters.

Reading the date of the first print page	
Reading the date of the last print page	LAST
Start graphics print	
Print programme and configuration page	
Exit print menu and back to main menu	EXII

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12 Basic oven settings (SETUP)



In this operating mode it is possible to make the basic settings of the oven. Clock time, date, day, year, and settings of sounder, of address assignment, monitoring units, heater power and calibration are set here.

The following parameters can be selected by turning the push/turn control, and altered as described in the Section "Setting the parameters":

Clock time in 24-hour format	
The winter/summer time changeover does not take place automatically	/430 h
but must be set manually by the user.	
	SET TIME
<u>Date</u>	
The controller incorporates a calendar which automatically allows for the	30.05
different lengths of the months and also for leap years.	SET IRTE
Weekday	Tu
	SET IAY
Year	
Adjustment range: from 2000 to 2100	2005
	SET YEAR
Audible signal at programme end	
ENDSOUND	OFF On
Setting: 0FF or 0N	ENISOUNI
Audible signal on alarm, e.g. overtemperature, open door ALARM SOUND	OFF On
Setting: 0FF or 0N	
	ALARM 50
Communication address	
Range: 0 to 15	AIIRE55
(see section 18)	
Tolerance margin ASF	85F 5ET
Range: 2 to 20	
(see section 12.2.4)	
Language Settings: GERMAN, ENGLISH, FRANCAIS, ESPANOL and ITALIANO	GERMAN
Settings. Generality, English, Hamons, Estanol and Haliano	

Calibration correction for user-calibration (see section 17)	[AL. r-h 20
Exit setup mode = store all settings and exit SETUP mode	EXII

12.1 Real-time clock

The real-time clock is set in SETUP and includes date and clock time. The real-time clock serves for documentation according to GLP. Date and clock time are marked in the report print.

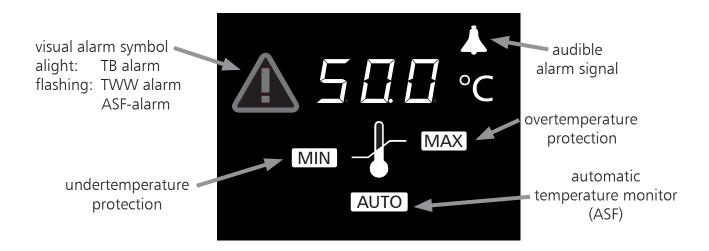
On the graphics print the time axis is marked in real-time.

The clock runs with a buffer battery independently of the mains power supply. The built-in lithium battery Type CR 2032 has a life of approx. 10 years.

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13 Temperature monitor and protection devices

The monitor temperature is measured with a separate PT100 temperature sensor inside the chamber. The monitor unit provides protection for the oven load as well as protection for oven and its surroundings.



13.1 Electronic temperature monitor HPP

13.1.1 Overtemperature protection MAX

Range: up to 5°C max above nominal temperature (for nominal temperature see label)



Using the push/turn control select the symbol MAX-Symbol anwählen.

Hold down the SET key and set the protection temperature using the push/turn control.

13.1.2 Undertemperature protection MIN

Range: from 5°C below minimum temperature of oven (for nominal temperature see label).

The low alarm cannot be programmed above the value set as high alarm.

Where no undertemperature protection is required, this has to be set to the lowest temperature.



Using the push/turn control select the symbol MIN. Hold down the SET key and set the protection temperature using the push/turn control.

Note:

The temperature monitor can be set independently of the operating mode.

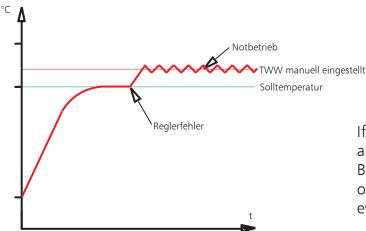
During ramp operation the monitor temperature must always be set sufficiently far above the maximum working temperature.

The manually adjusted monitor temperature **MIN** and **MAX** of the electronic overtemperature protection is monitored by an adjustable temperature monitor (TWW) <u>Protection Class 3.1 to DIN 12880.</u> The choice of temperature monitor is selected in SETUP.

(see the menu item Tolerance margin ASF in Section "Basic oven settings")

13.1.3 Adjustable temperature monitor (TWW) Protection Class 3.3 to DIN 12 880

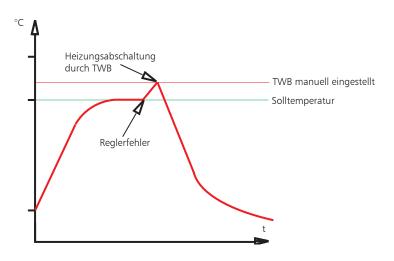
If the manually set monitor temperatur $\boxed{\text{MAX}}$ is exceeded, the TWW takes over the control of the temperature and starts to control at the monitor temperature. As a warning the alarm symbol \bigwedge is flashing.



If the sounder is switched on in SETUP, the TWW alarm is additionally signalled by an interrupted tone. By pressing the SET key the sounder can be switched off temporarily until the next occurrence of an alarm event.

13.1.4 Adjustable temperature limiter (TWB) Protection Class 2 to DIN 12 880 If the manually set monitor temperature MAX is exceeded, the TWB switches of the heating permanently

and can only be reset by pressing the SET key. As a warning the alarm signal is flashing.



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13.1.5 Automatic temperature monitor (ASF) AUTO

A monitoring device which automatically follows the selected temperature setpoint.

The tolerance margin of the ASF is set in SETUP (see the menu item Tolerance margin ASF in the Section "Basic oven settings SETUP").

Automatic temperature monitor OFF

(ASF OFF)



Using the push/turn control select the AUTO symbol.

Hold down the SET key and select **OFF** using the push/turn control.

Automatic temperature monitor ON

(ASF ON)



Using the push/turn control select the AUTO symbol.

Hold down the SET key and select **ON** using the push/turn control.

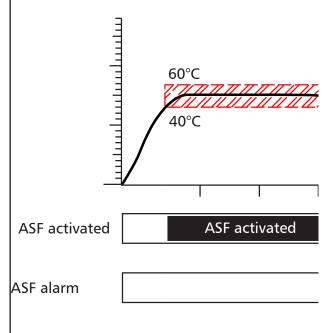
Notes on the ASF:

The tolerance margin for the ASF is selected in SETUP (see the menu item Tolerance margin ASF in the Section "Basic oven settings SETUP").

<u> Tolerance margin reached = ASF activated</u>

The ASF is automatically activated when the actual temperature has reached 50% of the selected tolerance margin of the setpoint (in the example 50° C - 5° C).

The activation of the automatic temperature monitor is indicated by the bright AUTO - symbol.

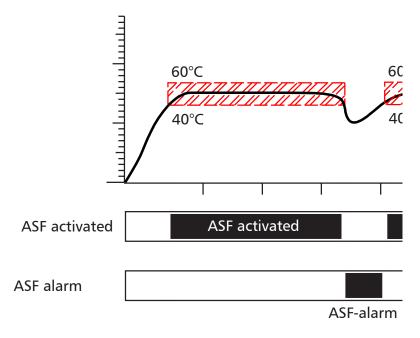


<u>Going outside tolerance margin = ASF alarm</u>

Going outside the selected tolerance margin of the setpoint (in the example 50°C +/-10°C), for example through opening the oven door during operation, triggers the alarm.

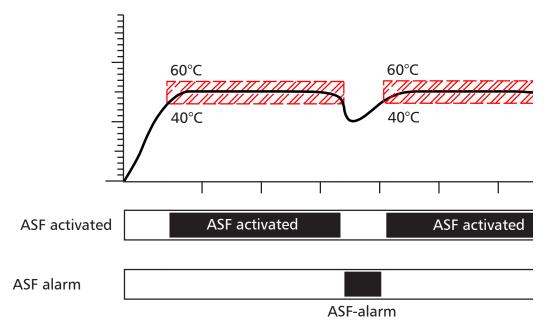
Triggering the ASF alarm is indicated by flashing AUTO and A -symbol.

If the sounder is switched on in SETUP, the ASF alarm is additionally signalled by an interrupted tone. By pressing the SET key the sounder can be switched off temporarily until the next occurrence of an alarm event.



<u>Again within tolerance margin = ASF alarm switched off</u>

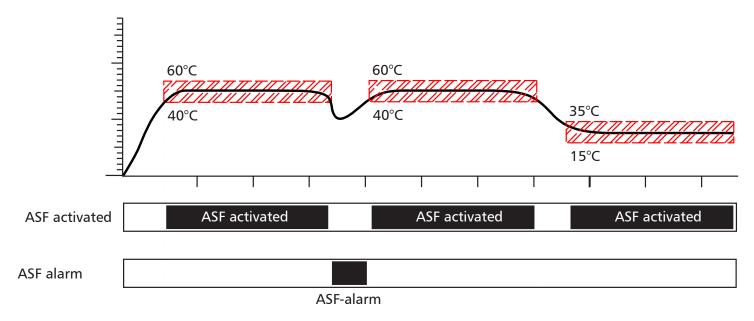
The automatic temperature monitor alarm is switched off automatically as soon as the selected tolerance margin of the setpoint (in the example 50°C +/- 10°C) is reached again.



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Setpoint changed = ASF de-activated automatically

If the temperature setpoint is altered, the automatic temperature monitor is automatically de-activated temporarily (see in the example the setpoint is changed from 50° C to 25° C) until the tolerance margin of the new temperature setpoint is reached (see in the example below: the ASF is re-activated at 25° C +/- 10° C).

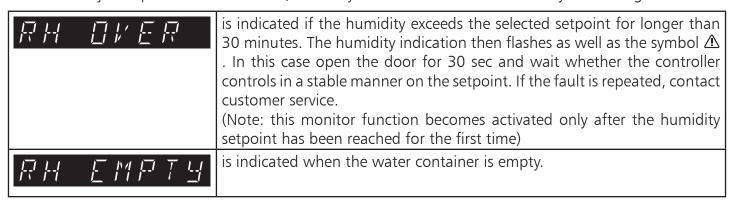


14 Active humidity control (%rh)

Active humidity control ensures that the set humidity is reached rapidly without the use ofwater dishes.

During the heating-up phase the humidity control is initially de-activated. Humidification and dehumidification control starts to operate approx. 5 minutes after the set temperature has been reached. The setpoint can be adjusted between 10% rh and 90% rh. The humidity setpoint can be set or altered during the stabilisation phase. Humidification operates by passing water vapour through a dosing pump into the working chamber. In order to prevent bacteria formation the steam is first heated to approx. 140°C. De-humidification.

If no humidity is required in the chamber, humidity control can be de-activated by the setting OFF.



15 Audible alert signals

The interval sound indicates a fault in the temperature control system or the humidifying system. It is triggered in the following cases:

Fault in the temperature control system:

TB-ALTIV	TB ACTIV - TEMPERATURE LIMITER ACTIVATED if the temperature limiter operates (see section 12.1)
	protection operates (see section 12.2.3)
LO-ALARM	LO-ALARM- UNDERTEMPERATURE ALARM ACTIVATED if the undertemperature protection operates (see section 12.2.3)
	ASF-ALARM - TEMPERATURE OUTSIDE TOLERANCE if the automatic monitoring function operates (see section 12.2.4)

Fault in the humidifying system:

RH	EMPTY	when the water container is empty.
FH	OVER	when the humidity exceeds the selected setpoint for longer than 30 minutes.

The audible alarm can be switched off temporarily by pressing the SET key.

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16 Calibration

User-calibration of oven and controller, with three calibration temperatures selected by the user.

- CAL1 temperature calibration at low temperature
- CAL2 temperature calibration at medium temperature
- CAL3 temperature calibration at high temperature

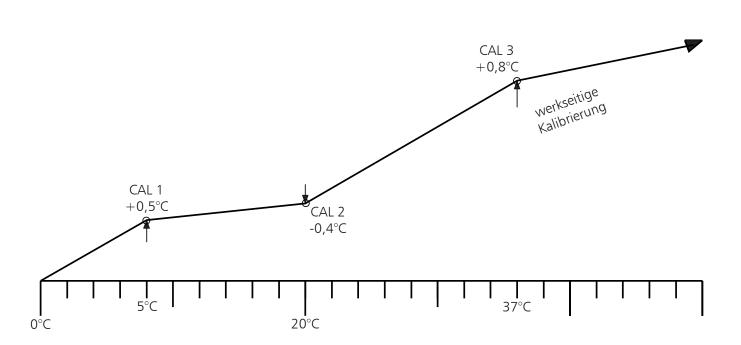
Either a positive or a negative calibration correction can be applied to each selected calibration point.

General calibration instructions:

- 1. Select the required calibration temperature in SETUP and set the corresponding calibration correction to 0.0°C.
- 2. Measure the deviation from the selected calibration temperature under steady conditions, using a reference instrument.
- 3. Set the calibration correction in SETUP. If the measured reference temperature is too low, the calibration correction setting has to have a negative sign.
- 4. Carry out a check measurement using the reference meter.
- 5. The procedure can be carried out for up to 3 calibration temperatures.

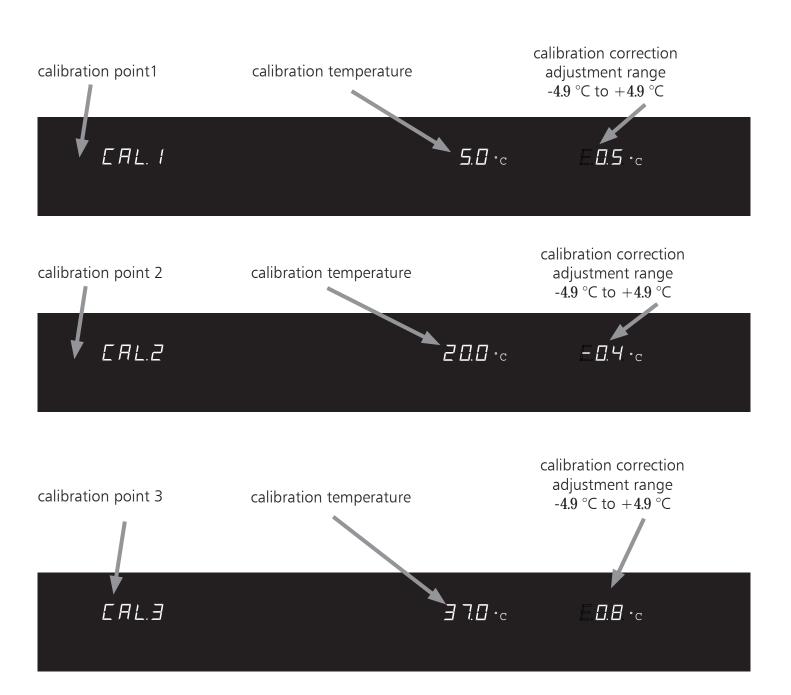
Example: Correction of a temperature deviation in the load at 20°C.

- 1. Set calibration temperature CAL2 to 20.0°C in SETUP and set the corresponding calibration correction to 0.0°C.
- 2. Using a calibrated reference instrument, an actual temperature of 19.6°C is measured in normal operation for a setpoint temperature of 20°C.
- 3. In SETUP set the calibration correction for CAL.2 to -0.4° C.
- 4. After the oven has settled down the reference instrument should read 20.0°C.
- 5. With CAL.1 a further calibration temperature can be programmed below CAL.2, and with CAL.3 an additional calibration temperature above CAL.2.



Note:

If all calibration corrections are set to 0.0°C the factory calibration is restored!



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17 Humidity

User-calibration of the unit at the controller, using two humidity points:

RH 20 Humidity calibration at 20% relative humidity

RH 90 Humidity calibration at 90% relative humidity

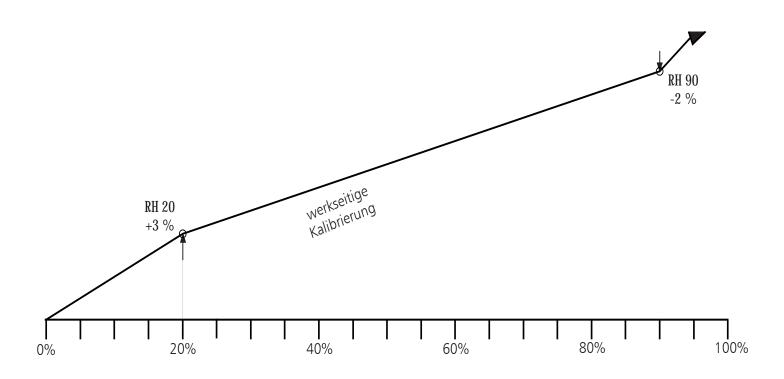
Either a positive or a negative calibration correction can be applied to each selected calibration point.

General calibration instructions:

- 1. Select the required calibration humidity in SETUP and set the corresponding calibration correction to $0.0\ ^{\circ}\text{C}$.
- 2. Measure the deviation from the selected calibration humidity under steady conditions, using a reference instrument.
- 3. Set the calibration correction in SETUP. If the measured reference humidity is too low, the calibration correction setting has to have a negative sign.
- 4. Carry out a check measurement using the reference instrument.
- 5. The procedure can be carried out for up to 2 calibration humidities.

Example: Humidity deviation at the load at 90% has to be corrected:

- 1. Set calibration humidity in SETUP on RH 90 and set the corresponding calibration correction to $0.0\ \%$
- 2. Using a calibrated reference instrument, an actual humidity of 88% is measured in normal operation for a humidity setting of 90%.
- 3. In SETUP set calibration correction for RH 90 to -2.0 %
- 4. The reference instrument should read 90.0% after the unit has settled down.
- 5. An additional calibration can be programmed with RH 20 at 20% relative humidity.





Note:

If all calibration corrections are set to 0.0 % the factory humidity calibration is restored.

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18 Communication interface for the PC

18.1 Communication interface USB

The oven is provided as standard with a USB-interface according to USB spezification.

Using this interface it is possible to control the oven from the PC and to produce reports. This is done using the "Celsius" software.

For this purpose the oven has to be assigned a unique device address in sub-menu SETUP, option ADDRESS; This is the address through which the PC communicates with the oven. The default setting is ADDRESS 0. Using this address each oven can be addressed by the PC and programmed.

If several ovens are connected by the USB interface to one PC, each oven requires a corresponding interface on the PC as well as a separate cable.

The maximum cable length is 5 m.

For connection of the oven to the PC there is a USB connector on the back of the oven. The oven can be connected to the PC using a A+B USB interface cable.

18.2 Bus interface RS485

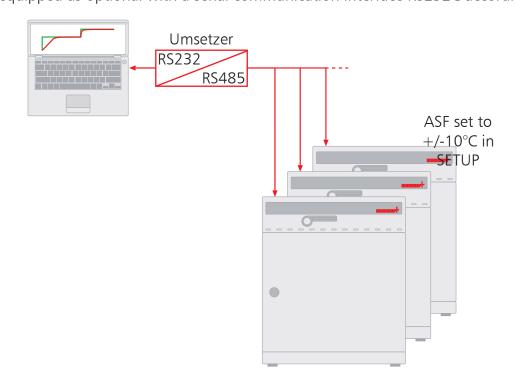
When so ordered, the oven can be equipped at the factory with an RS485 interface instead of the USB interface. This permits networking of several ovens (up to 16) with a single PC using a common 2-wire circuit. The system is operated using the "Celsius" software. A unique device address has to be assigned to the oven in sub-menu SETUP, option ADDRESS. This is the address through which the PC communicates with the oven. The default setting is ADDRESS 0. Using this address each oven can be addressed by the PC and programmed.

For this purpose the PC must be equipped with an RS485 interface or must be fitted with an RS232/RS485 converter. The cabling has to suit the individual location using a screened cable. The maximum total length of the cable is 150 m.

A maximum of 16 devices can be addressed on the RS485 bus. A termination resistance of 220 Ohm has to be connected to the last device.

18.3 Communication interface RS232C

The oven can be equipped as optional with a serial communication interface RS232C according to



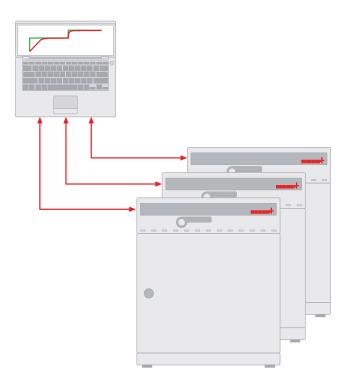
DIN 12-9001. Using this interface it is possible to control the oven from the PC and to produce reports. This is done using the "Celsius" software.

For this purpose the oven has to be assigned a unique device address in sub-menu SETUP, option ADDRESS; This is the address through which the PC communicates with the oven. The default setting is ADDRESS 0. Using this address each oven can be addressed by the PC and programmed.

If several ovens are connected by the RS232C interface to one PC, each oven requires a corresponding interface on the PC as well as a separate cable.

The maximum cable length is 15 m.

For connection of the oven to the PC there is a 9-pin connector on the back of the oven. The oven can be connected to the PC using a screened interface cable. The screen has to be connected to the plug case. If the serial interface is not being used, the cover supplied has to be fitted



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19 Report memory

The controller continuously records all relevant measurements, settings and error messages at 1-minute intervals.

The internal report memory is arranged as a ring memory, i.e. the new data always overwrite the oldest report data.

The report function can not be switched off but remains active at all times. The data are stored in the controller, protected against any manipulation. The controller memory can be read to produce documentation.

Every data set is stored with a unique date stamp.

The size of the internal report memory is 1024kB. This corresponds to a memory capacity of approximately 6 months' continuous operation.

During ramp operation a larger amount of data are stored in the memory so that the maximum report duration may be reduced.

If the power supply is interrupted, the instants of power failure and restoration of power are stored in the controller.

19.1 Reading the report memory

Past report data can be printed either via the USB interface or by a PLC3-compatible printer connected to the oven.

19.2 Reading the report memory into the PC via USB

Using the "Celsius" program the record memory of the controller can be read via the RS232C interface into a PC where it can be shown graphically, printed, and stored in memory.

Note:

The report memory of the controller is not altered or cleared by the reading procedure.

19.3 Printing the report memory from the climatic chamber

(see Section: "Printer")

If the printer is not ready, e.g. cartridge empty or no paper, no report data are lost. Prints can be repeated several times since the report memory is not cleared after printing.

The GLP data header is automatically included in the print-out: it contains the following information:

- Printing date
- Time period of report
- Running page number
- Serial number and oven designation

20 Memory card: MEMoryCard XL

A temperature programme with up to 40 ramps can be programmed on the MEMoryCard XL. Programming can take place directly on the controller or through the PC program "Celsius".

For improved clarity it is recommended that extensive programmes are prepared graphically on the PC. Where a MEMoryCard XL is programmed, it can be read only on the same oven type for which it has been programmed.

Marking:

The text field of the MEMoryCard XL can be marked individually with text or diagram.

20.1 Programming the MEMoryCard XL from the climatic chamber

Insert the MEMoryCard XL into the slot in the control panel field.

The selected settings are written directly to the card and stored on it. After the card has been removed, the programme stored internally in the controller becomes again activated.

20.2 Programming the MEMoryCard XL from a PC with the climatic chamber

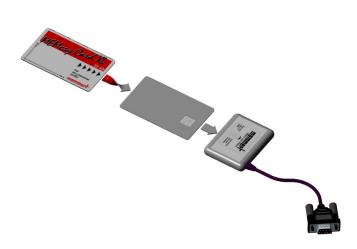
Link the PC to the oven with an interface cable via the serial interface (see Section: "Communication interface"). Insert the MEMoryCard XL into the input slot in the control panel field.

Write protection:

The MEMoryCard XL can be provided with write protection using the PC program "Celsius". The programme on the card can then not be altered on the controller.

20.3 Programming the MEMoryCard XL from a PC using the read-write unit

Using a read-write unit (which can be purchased separately) the MEMoryCard XL can be programmed from a PC with "Celsius" without any connection to an oven. It is important to ensure that the MEMoryCard XL has to be inserted with the contact field pointing upwards towards the marking of the read-write unit.



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Note:

The programme remains stored on the MEMoryCard XL after the card has been removed from the unit. It can however be overwritten at any time by the PC using "Celsius".

<u>Details on programming the MEMoryCard XL with PC and "Celsius" can be found in the Celsius Operating Manual and in the Online Help.</u>

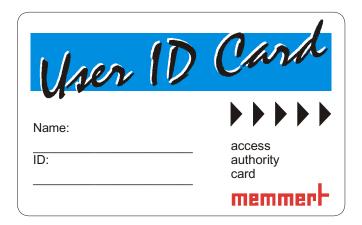
20.4 Documentation on memory card MEMoryCard XL

The actual temperatures can be documented continuously on the memory card while the programme is running from the chip card. After the programme has been completed they can be read and printed using "Celsius". The operation is described in the "Celsius" Operating Manual.

A certain amount of storage space is provided for documentation depending on the programme duration. The sampling rate is set automatically by the controller depending on the programme duration. With a programme duration up to 135 hours the documentation of the actual values on the MEMoryCard XL takes place with a 1-minute cycle. With programmes of longer duration the sampling time is extended up to 30 min max.

Documentation is started afresh on each programme start; the old report data are overwritten.

21 User-ID-Card (available as optional extra)



The User-ID-Card stores the serial number of the oven and a unique user number in encrypted format. The User-ID-Card therefore functions only in the oven with the corresponding serial number.

Each log-on via the User-ID-Card is documented in the internal flash memory.

If the User-ID-Card card is inserted, the SETUP menu includes the additional item ID-LOCK. When the setting is changed to 0N, all changes to the oven are blocked after the chip card has been removed.

The blockage through the User-ID-Card is indicated by the illuminated key symbol on the control panel.



<u>Important:</u>

If the oven is blocked through the User-ID-Card, there is no programme operation with the MEMoryCard XL since that card could be removed at any time and reprogrammed externally!

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22 Maintenance

Important for a long life of your MEMMERT product and in case of warranty claims.

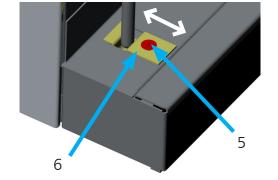
Note:

Any work involving opening up the oven must only be carried out by a suitably qualified electrician!

MEMMERT products require little maintenance. It is however recommended to lubricate all moving parts of the doors (hinges and closure) once a year (or 4 times a year with continuous operation) using a thin Silicone grease, and to check that the hinge screws are tight.

A well-closing door is essential on an oven. On Memmert ovens, tight closure of the door is ensured by a seal on the oven and another one on the door. In continuous operation the flexible sealing material may take a permanent set. Readjustment may then be necessary in order to ensure proper closing of the door.

- The top part (1) of the door hinge can, after releasing the 2 screws (2) at the top or bottom of the door, be moved slightly in the direction of the arrow.
- The door can be adjusted after releasing the socket screw (3) and rotating the excentric (4) by means of a screwdriver. NOTE! Screw (3) is locked with locking varnish. It can be released by a sharp tug using a hexagon socket key. Apply more locking varnish to screw (3) and tighten it.



The closing panel (6) can also be adjusted in the direction of the arrow after releasing the screw (5). It is important that the panel is then screwed down firmly.

23 Cleaning

Regular cleaning of the easy-to-clean inside of the chamber prevents deposits which over time can detract from the appearance and the functionality of the stainless steel chamber .

The metal surfaces of the oven can be cleaned with commercially available cleaning agents for stainless steel. It is important to ensure that no rust-forming object comes into contact with the chamber or the stainless steel casing. Rust deposits cause infection of the stainless steel.

If any contamination causes rust stains on the surfaces of the chamber, such spots must be cleaned off immediately and the area polished.

The control panel, the plastic input modules and other plastic components of the oven must not be cleaned using scouring cleaning agents or those containing solvents.

23.1 Cleaning HPP incubators

In order to ensure the proper function and long life of the Peltier cooling module it is essential to remove any dust deposits from the heat sink on the back of the incubator (using vacuum cleaner, brush or bottle brush depending on the amount of dust).

To assist with cleaning, the protective cover can be removed after releasing the screws.



24 Check list for fault rectification

Mains switch switched on: no indication on the display of the temperature module	equipment fuse has blown; 15A instrument fuse has blown; T100mA 250V~ on board 55162.x controller faulty (board 55616.x) power supply interrupted
Symbol <u>\$\text{\text{M}}\$</u> nor alight	ambient temperature too high temperature inside the unit higher than the selected setpoint temperature
Symbol \Lambda is alight	temperature protection (TB) has been activated
Symbol ⚠ is flashing	temperature protection (TWW, ASF) has been activated
and RH EMPTY	water container empty
and RH OVER	humidity setpoint has been exceeded
E-0 in temperature module	error on self-test
E-1 in temperature module	power unit triac faulty
E-2 in temperature module	power unit faulty
E-3 in temperature module	Pt100 temperature sensor faulty
E-6 in humidity module ERROR SENSOR RH	humidity sensor faulty
E-L1 in timer module	error communication to power unit L1

As far as HCP appliances are concerned, error messages are shown in the alphanumeric display. In case there is a fault on the oven, please get in touch with an authorised service organisation or contact the MEMMERT customer service department. (see section 25)

In case of queries always specify model and serial number (on the rating label)

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25 Supply failure

Supply failure in operating mode "Normal operation"

After a supply failure the operation is continued with the set parameters. The instant and duration of the supply failure are documented in the record memory.

Supply failure in operating mode "Weekly programmer"

After a supply failure the operation is continued with the set parameters. The instant and duration of the supply failure are documented in the record memory.

Supply failure in programme operation

After a supply failure lasting less than 15 minutes the current programme is continued at the point where it was interrupted. The instant and duration of the supply failure are documented in the report memory.

On a supply failure lasting longer than 15 minutes the oven immediately starts in manual operation for safety reasons and all settings are set to safe default values (see table).

Supply failure in remote operation

On a supply failure in remote operation the oven immediately starts in manual operation for safety reasons and all settings are set to safe default values (see table). Programme continuation has to take place from the PC. The instant and duration of the supply failure are documented in the report memory.

Parameter	Default-value
Temperature	20 °C
Humidity	20%rh

26 CE Conformity Declaration

Standard ovens HPP are safety-approved and bear the test marks:





This product is subject to the Directive 2002/96/EC by the European Parliament and the EU Council of Ministers which concerns Waste Electrical and Electronic Equipment (WEEE). This product has been put on the market after 13 August 2005 in countries which have already incorporated this Directive into National Law. It should not be disposed off as part of domestic refuse. For disposal please contact your dealer or the manufacturer. Products which are infected, infectious or contaminated with health-endangering substances are excluded from return. Please note also all further regulations in this context.

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EC Declaration of Conformity

Manufacturer's name and address: MEMMERT GmbH + Co. KG

Äußere Rittersbacher Straße 38

D-91126 Schwabach

Product: Constant-Climate-Chamber

Type: HPP ... Sizes: 108

Nominal voltage: AC 230 V 50 / 60Hz

alternative AC 115 V 50/60 Hz

The designated product is in conformity with the European EMC-Directive

89/336/EEC

including amendments

Council Directive of 03 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility.

Full compliance with the standards listed below proves the conformity of the designated product with the essential protection requirements of the above-mentioned EC Directive:

DIN EN 61326:2004-05

EN 61326:1997 EN 61326/A1:1998 EN 61326/A2:2001 EN 61326/A2:2003

The designated product is in conformity with the European Low Voltage Directive

73/23/EEC

including amendments

Council Directive on the approximation of the laws of the Member States relating to Electrical equipment for use within certain voltage limits.

Full compliance with the standards listed below proves the conformity of the designated product with the essential protection requirements of the above-mentioned EC Directive:

DIN EN 61 010-1 (VDE 0411 part 1):2002-08 DIN EN 61 010-2-010 (VDE 0411 part 2-010):2004-06 EN 61 010-1:2001 EN 61 010-2-010:2003

Schwabach, 09.04.08

(Legally binding signature of the issuer)

This declaration certifies compliance with the above mentioned directives but does not include a property assurance. The safety note given in the product documentation which are part of the supply, must be observed.

the-hayse

27 Address

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Germany

Phone: (+49) (0)9122 / 925-0 Fax:: (+49) (0)9122 /14585 E-mail: sales@memmert.com Internet: www.memmert.com

Customer service:

Phone: (+49) (0)9122 / 925-143 or (+49) (0)9122 / 925-126 E-mail: service@memmert.com

When contacting customer service, always quote the product serial number on the oven label.



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